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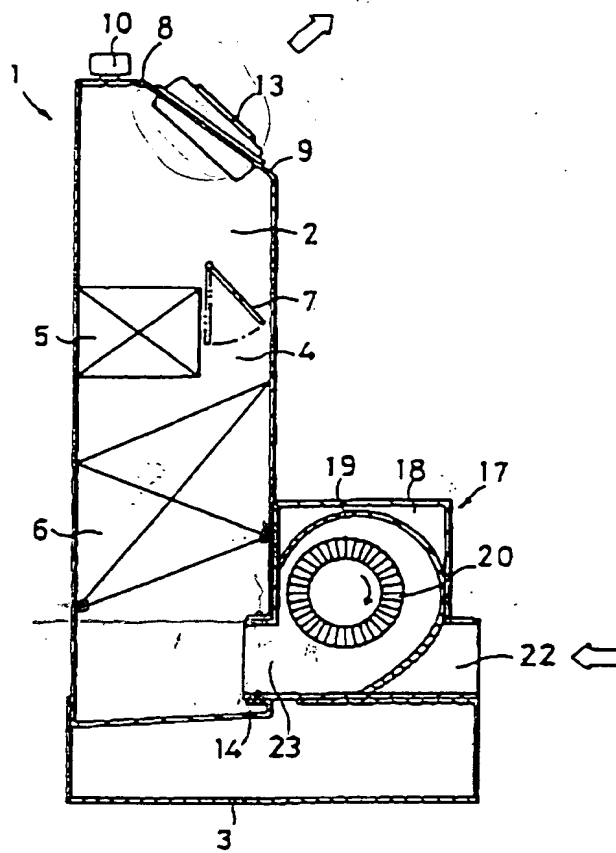
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(6)

公 平 5-3365

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第 5 图



* Japanese Examined Utility Model Publication (JPY2) No. 5-3365

Air conditioning apparatus body 1 is formed longwise to form a space 2 for accommodating air conditioning device by surrounding metal plates and is based on a supporting base 3. In the space 2, a bypass passage 4 is formed beside a heater 5 using coolant in a vehicle. Below the heater 5, an evaporator 6 is disposed. In the bypass passage 4, an air mixing door 7 for adjusting temperature is disposed. The air mixing door 7 works together with a water valve (not shown) for controlling a supply of the coolant.

Fig 5 shows
upflow

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7914-3L

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平成5年(1993)1月27日

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⑮ 考案の名称 車両用空調装置

審判 平1-11225

⑯ 実 願 昭59-160823

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審判の合議体 審判長 原 幸一 審判官 小野 新次郎 審判官 大久保 好二

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㉓ 実用新案登録請求の範囲

内部空間2に暖房用熱交換器5とその暖房用熱交換器の下方に冷房用熱交換器6を配すると共に、前記暖房用熱交換器5に流れる空気量を調節して温度調節する温度調節手段7とを備え、内部空間2の上方に吹出口13を下方に接続口14を設けた空調装置本体1と、

該空調装置本体1と別体に設けられ、内部空間18に送風機20を収納し前記接続口14と接続可能な吸入口22と吹出口23とが互に対向する位置に形成された送風装置本体17と、

該送風装置本体17の吸入口22または吹出口23の何れか一方を前記空調装置本体1の接続口14に連結する連結手段24とを備え、

冷房時及び中間期には、前記送風装置本体17の吹出口23と前記空調装置本体1の接続口14とを接続し、下方の接続口14から内部空間2に導入された空気を上方の吹出口13から吹き出し、暖房時には、前記送風装置本体17の吸入口22を接続口14に接続し、前記上方の吹出口13から内部空間2に導入された空気を接続口14を介して下方の吹出口23より吹き出すことを特徴とする車両用空調装置。

考案の詳細な説明

(産業上の利用分野)

この考案は、車両特に乗設車両用の空調装置に関する。

(従来の技術)

従来、車両用空調装置にあつて、暖房用熱交換器と冷房用熱交換器とエアミックスドア等の温度調節手段を設けて、一つの遠心型の送風機を用いて温調された空気を常に上方の吹出口より吹出していた。したがつて、夏期等の冷房時または中間期の冷暖風を混合して吹出させる時には良いが、冬期等の暖房時には、頭熱足寒となり空調フィリングが悪化していた。そして、送風機は小型で音響が少なく、同一風圧、同一風量、同一回転数に対し羽根車の直径が非常に小さくて済み、設備費、すべ付面積の節約ができるシロッコファン等の遠心送風機が用いられている。

(考案が解決しようとする問題点)

しかし、遠心送風機は、回転方向を選ぶために順方向回転と逆方向回転の切換回転ができなく、吹出方向は一方向であつた。これを解決するために、冷房専用、暖房専用の送風機を設けたものが実用化されているが、大型化にならざるを得ない欠点があつた。

そこで、この考案は、冷風の場合は上方の吹出が、暖風の場合は下方の吹出ができるようにしたことを目的とするものである。

(問題点を解決するための手段)

この考案の要旨は、内部空間2に暖房用熱交換器5とその暖房用熱交換器の下方に冷房用熱交換器6を配すると共に、前記暖房用熱交換器5に流

れる空気量を調節して温度調節する温度調節手段 7 とを備え、内部空間 2 の上方に吹出口 13 を下方に接続口 14 を設けた空調装置本体 1 と、

該空調装置本体 1 と別体に設けられ、内部空間 18 に送風機 20 を収納し前記接続口 14 と接続可能な吸入口 22 と吹出口 23 とが互いに対向する位置に形成された送風装置本体 17 と、

該送風装置本体 17 の吸入口 22 または吹出口 23 の何れか一方を前記空調装置本体 1 の接続口 14 に連結する連結手段 24 とを備え、

冷房時及び中間期には、前記送風装置本体 17 の吹出口 23 と前記空調装置本体 1 の接続口 14 とを接続し、下方の接続口 14 から内部空間 2 に導入された空気を上方の吹出口 13 から吹き出し、暖房時には、前記送風装置本体 17 の吸入口 22 を接続口 14 に接続し、前記上方の吹出口 13 から内部空間 2 に導入された空気を接続口 14 を介して下方の吹出口 23 より吹き出すことを特徴とする。

(作用)

したがって、冷風吹出しの場合には、空調装置本体の接続口に送風装置本体の吹出口を嵌入して上方の吹出口から上方吹出ができると共に、暖風吹出しの場合には、空調装置本体の接続口に送風装置本体の吸入口を嵌入して下方吹出ができるもので、前記目的を達成できるものである。

(実施例)

以下、この考案の実施例を図面により説明する。

図において、空調装置本体 1 は、金属板等で囲んで内部に空調機器を収納する空間 2 を有するように、ほぼ縦長に形成され、支持台 3 に固装されている。この空調装置本体 1 の空間 2 内には、上方にバイパス通路 4 を残して單面の冷却水による暖房用熱交換器 5 が、そして、その下方に冷房サイクルを構成するエバポレータの冷房用熱交換器 6 がそれぞれ配され、該バイパス通路 4 には、温度調節手段となるエアミックスドア 7 が配されている。このエアミックスドア 7 は、暖房用熱交換器 5 に冷却水の供給を制御する温水弁（図示せず）と連動して動かされる。

空調装置本体 1 の上方には、水平面 8 と傾斜面 9 とを有し、水平面 8 には、下記する送風機 20 の風量を OFF から徐々に増大するように調節す

る送風量コントロールスイッチ 10、前記冷房用熱交換器 6 の能力を制御するサーモコントロールスイッチ 11 及び前記エアミックスドア 7 を制御する温度コントロールレバー 12 を有しており、サーモコントロールスイッチ 11 は冷房サイクル OFF 接点と、それに続いて冷房サイクルを構成するコンプレッサの ON-OFF 温度制御接点とを有し、温度コントロールレバー 12 を動かすことで冷風と暖風との混合比が変化される。傾斜面 9 には、上方の吹出口 13 が設けられ、その方向を適宜に変化できる構成となつている。

空調装置本体 1 の下方には、その前面側に横方向に長い接続口 14 が形成され、該接続口 14 は前記した冷房用熱交換器 6 の下方の空間に接続されている。この接続口 14 には下記する送風装置本体 17 の吸入口 22 又は吹出口 23 が嵌入されて接続される。

送風装置本体 17 は、金属板等で囲んで内部に送風機 20 等を収納する空間 18 を有するように横長に形成されている。

送風装置本体 17 の内部には、スクロール 19、その内部に配される迴心型の送風機 20 及びその送風機 20 を回転させるモータ 21 を有し、その外側に長手方向に吸入口 22 とこれに対向する側に吹出口 23 とを突出して形成している。この吸入口 22 と吹出口 23 は共に同じ形状で、前記空調装置本体 1 の接続口 14 内に嵌込める形状となつている。

吸入口 22 は送風機 20 の吸込み側に連通され、吹出口 23 は送風機 20 の吹出し側に連通されている。したがって、送風機 20 が第 2 図矢印方向に回転すると、吸入口 22 から空気を吸入し、吹出口 23 から空気を吹出させることになる。

この送風装置本体 17 は前記支持台 3 上に設置され、しかる後に送風装置本体 17 と空調装置本体 1 とを連結手段 24 にて結合する。連結手段 24 はこの実施例では一方にフック部 24a を固着し、他にバツクル部 24b を設けた構成であるが、この連結手段に限定するものではない。

上述の構成において、冬期等における暖房時には、まず送風装置本体 17 の吸入口 22 を空調装置本体 1 の接続口 14 内に嵌入し、連結手段 24 にて固定する。即ち第 2 図に示すようにし、しか

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(考案の効果)

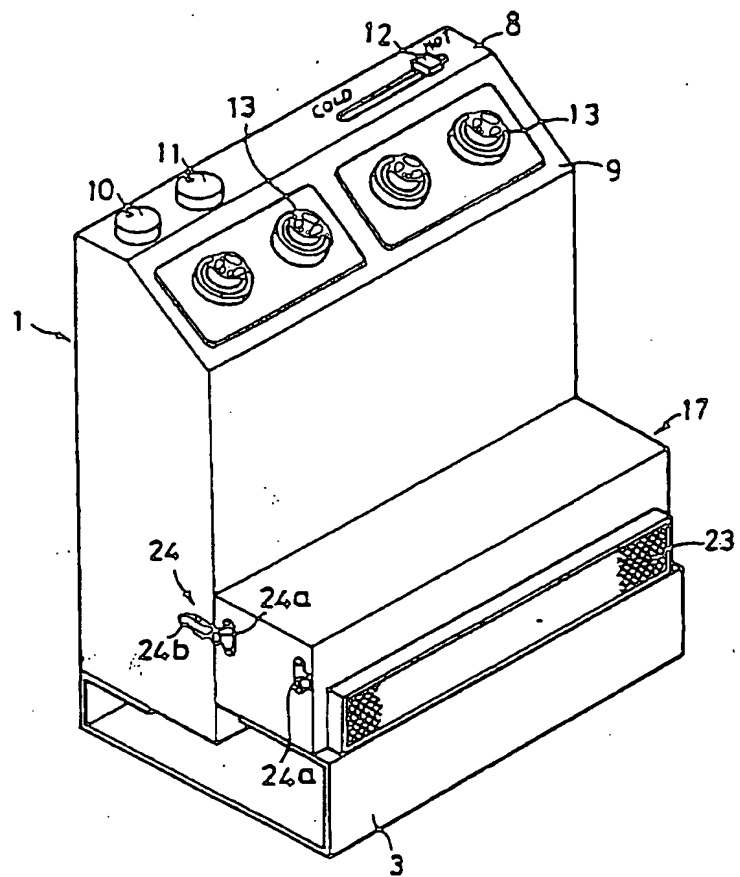
以上のように、この考案によれば、送風装置本体の空調装置本体への接続方向を変えることにより、冷房時には上方吹出を、暖房時には下方吹出を得ることができて、空調装置の基本である頭寒足熱を発揮でき、空調フィーリングを向上させることができる。

図面の簡単な説明

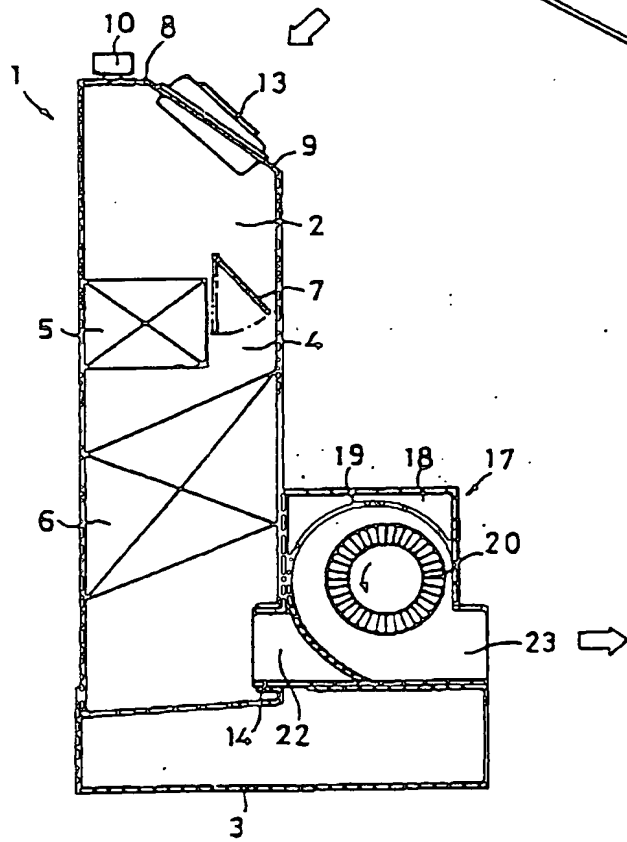
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1……空調装置本体、5……暖房用熱交換器、
6……冷房用熱交換器、7……温度調節手段、1
3……上方の吹出口、14……接続口、17……
送風装置本体、20……送風機、22……吸入
口、23……吹出口。

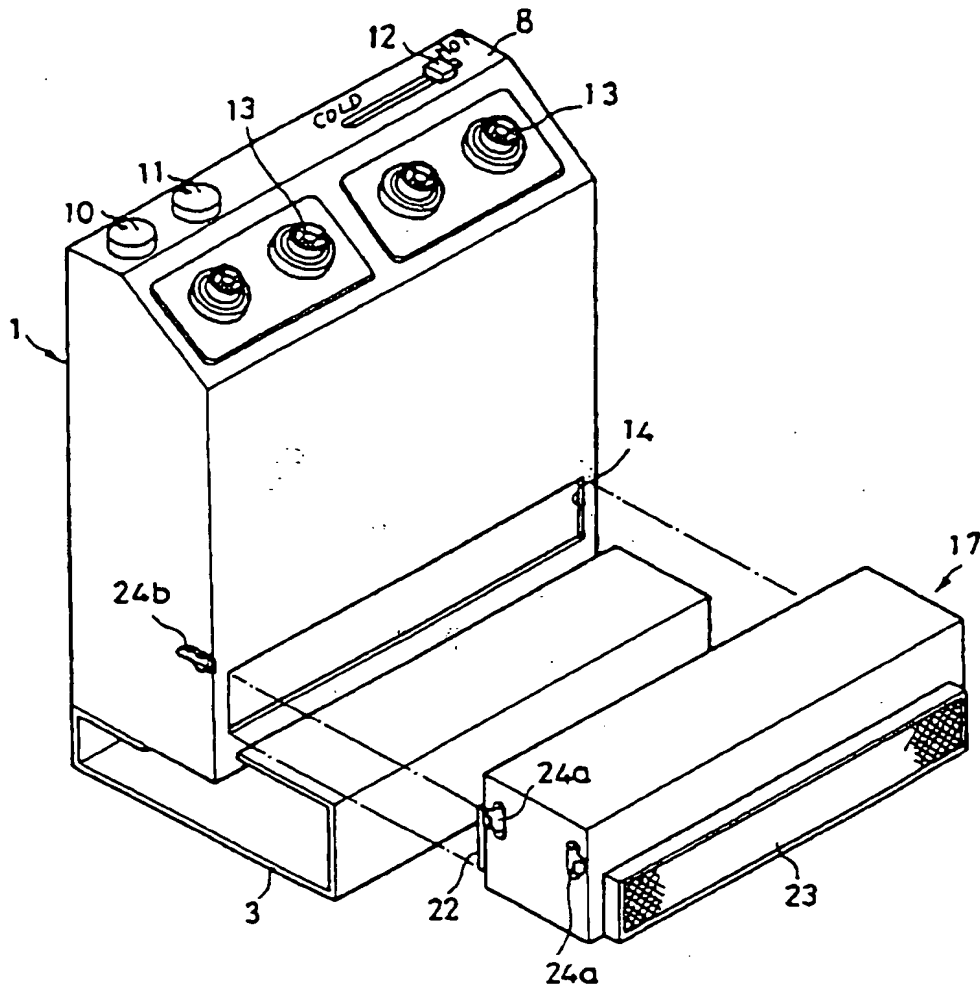
第 1 図



第 2 図



第 3 図



SN 09431, 531

PTO 2004-2329

Japan Kokai
Japanese Utility Model Publication
Publication No.: 5 - 3365

CAVITY DEVICE FOR VEHICLE

(Sharyo yo kudo sochi)

Hisayoshi Kinko

UNITED STATES PATENT AND TRADEMARK OFFICE

Washington D.C.

March 2004

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<u>Document No.</u>	:	5-3365
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<u>Applicant</u>	:	Zigsell Co.
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<u>Publication Date</u>	:	January 27, 1993
<u>Foreign Language Title</u>	:	Sharyo yo kudo sochi
<u>English Title</u>	:	CAVITY DEVICE FOR VEHICLE

Scope of Utility Model Registration Claims

The cavity device for vehicle is characterized as being provided with a heat exchanger 5 for heating in the interior space 2 and a heat exchanger 6 for cooling is provided on the lower part of that heat exchanger for cooling; it is provided with a temperature adjusting means 7 for adjusting the air amount flowing into the aforementioned heat exchanger 5 for heating and a cavity device main body 1 is provided with a connection outlet 14 on the bottom of the air flow outlet 13 on the top of the interior space 2;

Separate from this cavity device main body 1 is an air transfer device main body 17 that is formed at a position so the suction inlet 22 and the air flow outlet 23 are facing each other, these are connected to the aforementioned connection outlet 14 and an air transfer machine 20 is contained in the interior space 18;

A connection means 24 is provided connecting one end of the air suction inlet 22 or the air flow outlet 23 of the said air transfer device main body 17 to the connection outlet 14 of the aforementioned cavity device main body 1.

¹ the numbers in the margin indicate pagination in foreign text

The connection outlet 14 of the aforementioned cavity device main body 1 is connected to the air flow outlet 23 of the aforementioned air transfer device main body 17 during cooling and during the intermediate intervals. The air introduced into the interior space 2 from the connection outlet 14 at the bottom is blown from the upper air flow outlet 13. During heating, the air suction inlet 22 of the aforementioned air transfer device main body 17 is connected to the connection outlet 14. The air introduced to the interior space 2 from the aforementioned upper air flow outlet 13 is blown out from the air flow outlet 23 at the bottom via the connection outlet 14.

Detailed explanation of the device

(Industrial field of use)

This device pertains to a cavity device used in vehicles.

(Prior Art)

Conventionally, a temperature adjusting means is provided such as an air mix door, a heat exchanger for cooling and a heat exchanger for heating. Usually, air that have its temperature adjusted using a centrifugal type of air flow machine is blown out from the upper air flow outlet. Therefore, during the summer time, the cooling air is mixed for cooling the room and in the winter, the hot air is mixed for heating the room. The air transfer machine is small so the noise is low. Since the diameter of the wind vane is extremely small, the same wind

pressure, the same wind amount and the same rotation amount can be adjusted so the design cost, the adjustment of the surface area is small for the centrifugal air transfer machine.

(The problems resolved by the invention)

However, the centrifugal air transfer machine only blow out in one direction, the rotation direction cannot be switched to rotate in the opposite direction so the rotation direction cannot be selected. To resolve this, the air transfer machine

for heating is provided but the drawback is that this is a large machine.

Therefore, the purpose of this device pertain to a means to blow the air up when it is cool air and blow the air down when it is hot air.

(Means for resolving the problems)

The cavity device for vehicle is characterized as being provided with a heat exchanger 5 for heating in the interior space 2 and a heat exchanger 6 for cooling is provided on the lower part of that heat exchanger 5 for heating; it is provided with a temperature adjusting means 7 for adjusting the air amount flowing into the aforementioned heat exchanger 5 for heating and a cavity device main body 1 is provided with a connection outlet 14 on the bottom of the air flow outlet 13 on the top of the interior space 2;

/2

Separate from this cavity device main body 1 is an air transfer device main body 17 that is formed at a position so the suction inlet 22 and the air flow outlet 23 are facing each other, these are connected to the aforementioned connection outlet 14 and an air transfer machine 20 is contained in the interior space 18;

A connection means 24 is provided connecting one end of the air suction inlet 22 or the air flow outlet 23 of the said air transfer device main body 17 to the connection outlet 14 of the aforementioned cavity device main body 1.

The connection outlet 14 of the aforementioned cavity device main body 1 is connected to the air flow outlet 23 of the aforementioned air transfer device main body 17 during cooling and during the intermediate intervals. The air introduced into the interior space 2 from the connection outlet 14 at the bottom is blown from the upper air flow outlet 13. During heating, the air suction inlet 22 of the aforementioned air transfer device main body 17 is connected to the connection outlet 14. The air introduced to the interior space 2 from the aforementioned upper air flow outlet 13 is blown out from the air flow outlet 23 at the bottom via the connection outlet 14.

(Action)

Therefore, when the cool air is blown out, it is blown out of the air flow outlet of the air transfer device main body into

the connection outlet of the cavity device of the main body, it is blown upward from the upper air flow outlet. When the hot air is blown out, it is blown into the air suction inlet of the air transfer device main body into the connection outlet of the cavity device of the main body, it is blown downward so the above purpose can be achieved.

(Implementation example)

An implementation example of this device is explained according to the diagrams.

In the diagram, the cavity device main body 1 consists of a space 2 for storing the cavity machine at the inner part that is surrounded by a metal plate and it is formed into a rectangle and fixed on a support platform 3. In the space 2 of this cavity device main body 1, a pipe for the through path 4 is provided on the upper side for the heat exchanger 5 for heating, it is used during the heating cycle and a heat exchanger 6 with an evaporator used for cooling is used during the cooling cycle and it is arranged on the lower end. Then, the air mix door 7 is arranged in the said pipe for the through path 4 and this is the temperature adjusting means. This air mix door 7 moves with a temperature valve (not shown in the diagram) to control the supply of the cool water in the heat exchanger 5 for heating.

A horizontal surface 8 and an incline surface 9 are provided at the upper side of the cavity device main body 1. The

air amount in the air transfer machine 20 at the horizontal surface 8 is increased gradually from OFF, this is controlled by an air transfer amount control switch 10. A simo control switch 11 is used to control the capability of the aforementioned heat exchanger 6 for cooling and the temperature control lever 12 is used to control the air mix door 7. The simo control switch 11 is at the OFF connection point at the cooling cycle. The ON-OFF temperature control connection point of the compressor is for the cooling cycle. The mixing ratio of the cool air and the warm air are changed by moving the temperature control lever - 12. A air flow outlet 13 at the upper end is provided at the incline surface 9 and this direction can be appropriately changed.

A long connection outlet 14 is formed in the transverse direction at the bottom of the cavity device main body 1. The said connection outlet 14 is connected to the space at the bottom of the heat exchanger 6 used for cooling. The air suction inlet 22 or the air flow outlet 23 of the air transfer device main body 17 are connected to this connection outlet 14.

The air transfer main body 17 is formed having space 18 containing the air transfer machine 20 in the interior surrounded with a metal plate.

In the interior of the air transfer device main body 17 are the motor 21 and scroll 19, the motor is for rotating the air transfer machine 20 and this air transfer machine 20 of the

centrifugal type is arranged inside the scroll. The air transfer outlet 23 protrudes on one side facing the air suction inlet 22 in the longitudinal direction of one side. The air suction inlet 22 and the air flow outlet 23 have the same shape. These are inserted inside the connection outlet 14 of the aforementioned cavity device main body 1.

The air suction inlet 22 is connected to the air suction side of the air transfer machine 20. The air flow outlet 23 is connected to the side where the air blows out of the air transfer machine 20. Therefore, when the air transfer machine 20 is rotated in the direction of the arrow shown in figure 2, the air is sucked in from the air suction inlet 22. The air from the air flow outlet 23 is blown out.

This air transfer device main body 17 is arranged on the aforementioned support platform 3. In addition, the air transfer device main body 17 and the cavity device main body 1 are connected by a connection means 24. In this implementation example, the connection means 24 is fixed to one side of the hook part 24a. Another buckle part 24b can be used so the use is not limited to this connection means.

In the above constitution, during the heating in the winter time, first, the air suction inlet 22 of the air transfer device main body 17 is inserted inside the connection outlet 14 of the cavity device main body 1 and it is fixed by the connection

means 24. That is, as shown in figure 2, the temperature control lever 12 is switched to the HOT side, the air flow amount control switch 10 is switched to a suitable air flow amount from OFF. Thus, the air inside the car is blown out the air flow outlet 13 at the top. The car is heated by the heat exchanger 5 used for heating. Air is blown out to the car from the air flow outlet 23 via the air transfer machine 20 via the inactive heat exchanger 6 used for cooling. /3

During the summer time for cooling, first, the air transfer device main body 17 is at the state shown in figure 2, the said main body 17 is removed. As shown in figure 5, the air flow outlet 23 of the said air transfer main body 17 is inserted into the connection outlet 14 of the cavity device main body 1. Up till now, it has been connected in reverse.

Then, the temperature control lever - 12 is switched to the COLD side, the si-mo control switch 11 is switched to a suitable position from OFF. The air transfer amount control switch 10 is switched to the suitable air transfer amount position from the OFF position. Thus, the air from the bottom is sucked inside the car from the suction inlet 22 of the air transfer device main body 17. The air is sent from the air flow outlet 23 of the said air transfer device main body 17 to the cavity device main body 1. This becomes the cold air in the heat exchanger 6 for cooling. The cool air is blown out to the upper part of the

interior of the car from the air flow outlet 13 at the upper side via the heat exchanger 5 for heating that will be activated if necessary.

Furthermore, if the blowing out temperature during the intermediate period has to be reduced, the temperature control lever - 12 is moved a suitable amount to the HOT side so cool water for the engine is introduced to the heat exchanger 5 for heating and the cooled air is controlled to be reheated to a suitable amount by going through the heat exchanger 5 for the heating in the air mix door 7.

(Effect of device)

According to the device as explained above, by changing the connection direction to the cavity device main body of the air transfer device main body, the air blown out from the upper part is used during cooling and air blown out from below is used during the heating. The heating and cooling can be realized with the basic cavity device and the cavity filling can be improved.

Brief explanation of the diagrams

Figure 1 is the diagram showing the implementation example of this device. Figure 2 is the cross section of the above diagram. Figure 3 is the diagram showing the state where the air transfer device main body is removed from the cavity device main body. Figure 4 is the diagram looking from the air flow outlet direction of the air transfer device main body. Figure 5 is the

cross section shown the air blowing out state during the cooling period.

1 - cavity device main body, 5 - heat exchanger for heating, 6 - heat exchanger for cooling, 7 - temperature adjusting means, 13 - air flow outlet from upper side, 14 - connection outlet, 17 - air transfer device main body, 20 - air transfer machine, 22 - air suction inlet, 23 - air flow outlet

第4図

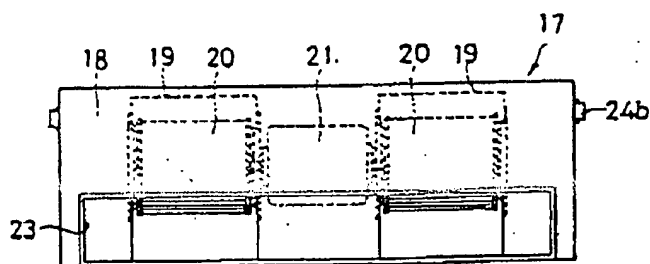


Figure 4

第1図

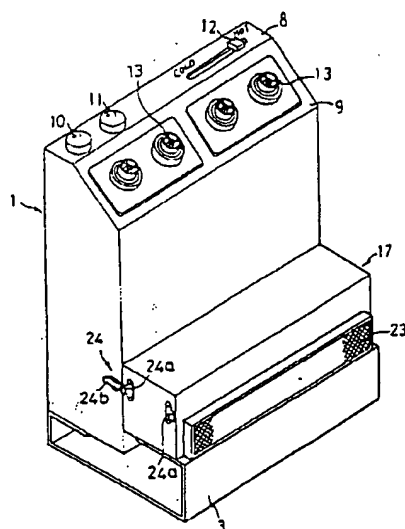


Figure 1

第2図

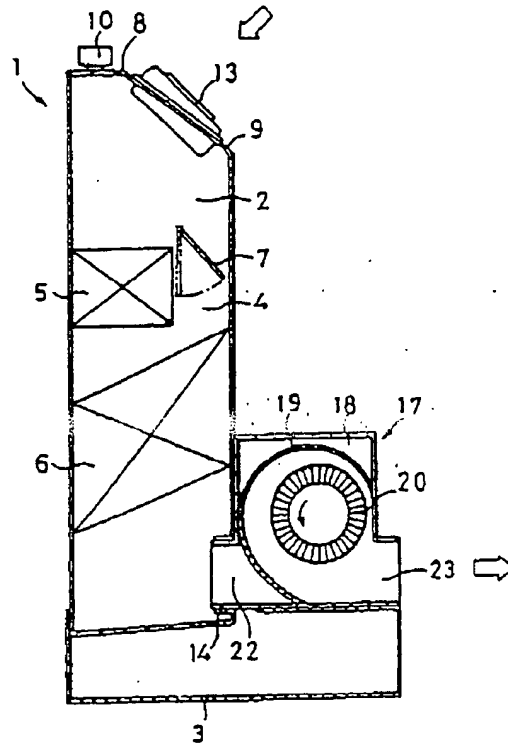
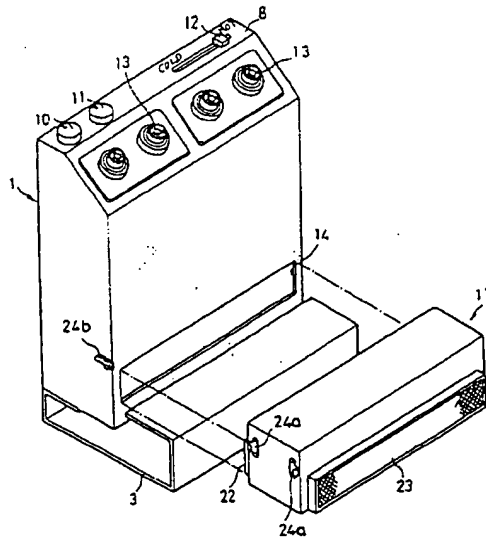


Figure 2

第3図



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@PJL SET OUTBIN=UPPER
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@PJL SET RESOLUTION=300
@PJL SET BITS PER PIXEL=1
@PJL ENTER LANGUAGE=PCL